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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/733,802 | 12/12/2003 | Russell Smith | 006242.00046 | 8820 |

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PATENT GROUP GA030-43
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| EXAMINER | |
|---|---|
| RUDDOCK, ULA CORINNA | |
| ART UNIT | PAPER NUMBER |
| 1794 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/733,802 | SMITH, RUSSELL | |
| | Examiner | Art Unit | |
| | Ula C. Ruddock | 1794 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-10,12-18 and 20-26* is/are pending in the application.

4a) Of the above claim(s) *14 and 15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12,13,16-18,20-24 and 26* is/are rejected.

7)☒ Claim(s) *25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. The Examiner has carefully considered Applicant's amendment and accompanying remarks filed July 30, 2007. In view of Applicant's response, the previous rejection has been modified by the addition of a new prior art reference..

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### *Claim Objections*

3. Claim 25 is objected to because of the following informalities: "acrylate" in line 2 has been misspelled and should be amended to read on "acrylate." Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

4. Claims 1, 2, 7-10, 12, 16-18, 22-24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colbert (US 2004/0154264) in view of Lightner, Jr. et al. (US 2005/0126430) and Eckberg et al. (US 6,610,760). Colbert discloses a coated gypsum board product comprising a gypsum core and facing sheets (abstract). The board can be coated with paper on both sides thereof [0012]. In some applications, the facing sheet is a paper blended with mineral or synthetic fibers [0067]. The coating contains calcium carbonate, fillers, latex emulsions, and perlite filler [0015]. A silicone derivative is added as a hydrophobic agent [0035]. It should be noted that the Examiner is equating the calcium carbonate and perlite filler of Colbert to be the same as Applicant's fillers and the latex emulsion of Colbert to be the same as Applicant's binder. It is the Examiner's position that "cured in place" is a method step. It should be noted that the method of forming an article is not germane to the issue of patentability of the article itself. Therefore, this

limitation has not been given patentable weight. Finally, the burden has been shifted to Applicant to show the unobvious differences between the claimed product and the prior art product. With regard to the limitation that the gypsum "partially penetrates into the fibrous facing material, because Colbert does not disclose any layer between the gypsum substrate and the paper facings, the gypsum material has to penetrate the fibrous facings to a degree in order to form a bond between the two layers.

Colbert discloses the claimed invention except for the teaching that the coating is a radiation curable coating formulation.

Lightner, Jr. et al. (US 2005/0126430) disclose a building article with bioresistant properties comprising gypsum composite materials. A biocidal agent is applied as a treatment to the fibers reinforcing the article (abstract). In one embodiment, the building article comprising a gypsum based core having two opposing surfaces and paper sheets bonded to the opposing surfaces [0009]. The biocide surface treatment can also contain a latex or other film forming material that may be dried by various types of curing methods. The curing methods include radiation curing such as UV and electronic beam curing [0026]. It should be noted that in Applicant's arguments, "high energy" is defined as UV or electronic beam radiation. It would have been obvious to one having ordinary skill in the art to have used Lightner's method of radiation curing on the coating of Colbert, motivated by the desire to create a coating that is quickly dried, cured, and activated.

Regarding Applicant's limitation of an "aggregate material on the high energy radiation cured coating," it is the Examiner's position that because Colbert discloses in paragraph [0045] that

the coating (which comprises the aggregate material) is applied to the facing sheet or the gypsum core to a uniform thickness that is preferably not sensitive to surface irregularities. It is the Examiner's position that this disclosure can be properly equated to Applicant's requirement that some of the aggregate material is on the coating.

Regarding claims 16-18, Applicant discloses in paragraphs [0064, 0065, 0069], that the coating formulation can comprises acrylic acid esters, which have ethylenically unsaturated double bonds. Colbert, in paragraph [0088], discloses acrylic acid esters as a preferred latex emulsion. Therefore, these limitations have been met.

Colbert and Lightner, Jr. disclose the claimed invention except for the teaching that the cured coating comprises a polymer present in an amount between about 20-99 weight percent.

However, in the absence of unexpected results, it would have been obvious to one having ordinary skill in the art to have optimized the amount of polymer material in the coating, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. In the present invention, one would have optimized the amount of polymer present in the coating motivated by the desire to create a gypsum panel that is quickly cured and has good film forming properties.

***Colbert and Lightner, Jr. disclose the claimed invention except for the teaching of the coating additional comprising at least one reactive diluent. Eckberg et al. (US 6,610,760) disclose radiation curable coating compositions useful on a wide variety of substrates, including paper (col 6, ln 21-33). The radiation curable coating further comprises a reactive***

***diluent, preferably vinyl ethers (col 6, ln 11-20). It should be noted that Applicant, in paragraph [0087] disclose vinyl ethers as suitable reactive diluents. Therefore, it would have been obvious to one having ordinary skill in the art to have used the vinyl ether reactive diluent of Eckberg et al. in the coating composition of Colbert and Lightner, Jr., motivated by the desire to create a coating composition that has improved adhesion and flexibility.***

5. Claims 3-6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colbert (US 2004/0154264) and Lightner, Jr. et al. (US 2005/0126430) and Eckberg et al. (US 6,610,760), as applied to claim 1 above, and further in view of Randall et al. (US 2003/0203191). Colbert, Lightner, Jr. et al., and Eckberg et al. disclose the claimed invention except for the teaching that the facing material is a non-woven mat of glass fibers or synthetic fibers or a blend of synthetic and mineral fibers. Colbert and Lightner, Jr. et al. and Eckberg et al. also fail to disclose that a water-resistant additive is added to the gypsum core.

Randall et al. (US 2003/0203191) discloses a mat-faced gypsum board comprising a set gypsum core sandwiched between and faced with mats of glass fibers (abstract). The fibrous mat comprises material that is capable of forming a strong bond with the set gypsum comprising the core of the gypsum board. Examples of such material include a mineral-type material such as glass fibers and synthetic resin fibers. The mat can be woven or nonwoven in form [0038]. The core of the gypsum board also preferably includes a water-resistant additive [0023], such as siliconates, wax emulsions, or organopolysiloxane [0033] and [0035]. It would have been obvious to have used the glass and synthetic facer material of Randall et al. as the facers in the product of

Colbert, Lightner, Jr. et al., and Eckberg et al., motivated by the desire to create a product having decreased delamination and increased strength. It also would have been obvious to have used the water resistant additive of Randall on the gypsum core of Colbert, Lightner, Jr. et al., and Eckberg et al. motivated by the desire to create a gypsum product having increased water resistance.

6. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colbert (US 2004/0154264), Lightner, Jr. et al. (US 2005/0126430), and Eckberg et al., as applied to claim 1 above, and further in view of Garnett et al. (US 6,162,511). Colbert, Lightner, Jr. et al., and Eckberg et al. disclose the claimed invention except for the teaching that the coating further comprises a photoinitiator present in the amount from 0.05 to 20 weight percent.

Garnett et al. (US 6,162,511) disclose a substrate coating with a radiation curable composition comprising a photoinitiator (col 3, ln 25-40) in the amount of 0.1 to 15 % by weight (col 3, ln 53-56). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used Garnett's photoinitiator in the amount of 0.1 to 15% by weight in the coating of Colbert, Lightner, Jr. et al., and Eckberg et al., motivated by the desire to create a radiation curable coating that is easily and quickly cured.

### *Response to Arguments*

7. Applicant's arguments with respect to claims 1-10, 12-13, 16-18, and 20-26 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ula C. Ruddock whose telephone number is 571-272-1481. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H. Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/U. C. R./

/Ula C Ruddock/
Primary Examiner, Art Unit 1794